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PROCEEDINGS
OF THE
AMERICAN SOCIETY OF MICROSCOPISTS.

MINUTES OF THE EIGHTH ANNUAL MEETING.

The Eighth Annual Meeting of the Society was held in Cleveland, O., August 18, 19, 20 and 21, 1885.

TUESDAY, August 18, A. M. Session.

The meeting was called to order by Mr. C. M. Vorce of the Cleveland Microscopical Society, at 10.30 A. M., in the new Court-house. Mr. Vorce addressed the Society:

“It is literally true that words are inadequate to express the gratification that the members of the Cleveland Society experience in being at last permitted to welcome your coming to this city as our guests. It is an event that we have for years looked forward to with very bright and hopeful anticipations.

“The pleasure of making the acquaintance of so many gentlemen not only in our own pursuit but in other branches of science and attracting them to our city has since the first formation of this Society been the subject of frequent and earnest consideration by the microscopists of Cleveland, but there have been difficulties in the way which we have not found it easy to overcome, and circumstances have seemed to counsel delay. So, with what patience we could, we have waited all these years, hoping always soon to realize the consummation of our wishes and trusting to oft-repeated assurances that soon a favorable opportunity would offer to invite you to our city. But with all our waiting there has been practically no change in circumstances, and it seemed to us useless to wait longer, and last fall we concluded to invite you to meet with us this year although the facilities we could offer you might not be all that you could wish. While the Forest City offers innumerable attractions and inducements for visitors to sojourn with us, it is singularly wanting in buildings containing halls suitable for a convention of this kind, although several fine new buildings are just approaching completion which are admirably adapted for such purposes, and some of which that have been in progress for years we had hoped would be completed in time for this meeting. But inadequate as are the facilities we can offer in the way of meeting halls, etc., our hearts

are enlisted in the cause and objects of your meeting, our interest in your proceedings will be found unfailing, and I can assure you we could not give you a warmer or more heartfelt welcome if we were able to offer you a palace for your meeting place. We feel sure that your coming among us and the holding of your meeting here will stimulate in this community the love for scientific research and will widen the field for usefulness of our own local society.

"From the responses we have received from members and others interested in microscopy, we have every reason to anticipate a large attendance, a gathering of more than usual interest and the accomplishment of valuable results, which will add luster to your society. I take pleasure in introducing to you Hon. George W. Gardner, the Mayor of our city, who will express to you the sentiments of our citizens regarding your meeting."

Mr. Vorce then introduced Hon. George W. Gardner, Mayor of the city, who cordially welcomed the Society in behalf of the citizens of Cleveland. In the course of his remarks he said:

"As a citizen of Cleveland I can assure you that I take pride in extending to you a hearty welcome to our city. I take great pride in the fact that such a large representation of men of high intelligence has selected this city for the place of its annual meeting. As chief executive of the city I express the honor which I believe we all feel in the fact that you have made such a selection; and, in behalf of the city, I extend to you a hearty welcome, and assure you that we will do all in our power to make this meeting as pleasant and profitable as we can. I hope your meeting will be productive of good results, and I entertain no doubt that matters of great magnitude to science and to mankind will be the outgrowth of your deliberations."

To this address President Hamilton L. Smith responded, on behalf of the Society, as follows:

"In the name of the American Society of Microscopists, I thank you, Mr. Mayor, for the words of welcome which you have given to us in behalf of the citizens of Cleveland. When your beautiful city was named as the place for our next meeting, we felt assured of a cordial welcome, for along the whole line of these great inland lakes, at once the glory and pride of our country, from the farthest shores of Superior to where Ontario's waters sparkle in the sunlight around the Thousand Isles, no more beautiful place than the Forest City can be found; certainly none with larger commercial enterprises, or greater art and science industries. We come to you, sir, not as noisy politicians, greedy for office, under the name of civil service reform, nor as theologians, endeavoring to settle some shade of doctrine,—we come as simple science students searching for truth, for the love of truth; and though our studies are confined to the investigation of the minute objects of nature, we believe that in the minute things the Creator is greatest, and that every addition to our knowledge of the working of natural laws, especially as

manifested in the minute world, will be a powerful factor of the new civilization. As for myself, sir, I lack words to express the thoughts that are pressing for utterance. Fifty years ago, less three, I came to this beautiful city; at that time the palatial hotel was the American, with its genial host, Philo Scoville. My destination was westward, across the pontoon bridge which then spanned the Crooked river, near where now is your noble viaduct. I climbed the hill to Ohio City, whose inhabitants then proudly prophesied that soon Cleveland would be eclipsed by their prosperous city—a prediction more nearly fulfilled at that time than at any time since. Not far from where we are now assembled, stands a magnificent building, bearing the name of the two brothers whose memories will ever be associated with the growth and prosperity of Cleveland. Where that building now stands was a small one-story structure called the 'Ark,' not from any fancied resemblance to Noah's vessel, but, I suppose, because within it was congregated literally all sorts and kinds of animals. Here was the birth-place of science and literature of Cleveland. Here was first brought what might claimed to be a microscope. It was what we would now call a rather inferior instrument; one of Nachet's best, however, as then made. Soon after came one of Spencer's, a perfect marvel then, though it would be considered now little better than a curiosity.

"At that time there were bright and active young men here whose headquarters were the 'Ark,' and they inaugurated the 'Cleveland Academy of Sciences,' afterwards known as the 'Kirkland Academy,' which, it was fondly hoped, would grow and flourish with the growth of Cleveland.

"I trust you will not consider me uncourteous, sir, or as finding fault, if I express my regret that your citizens have allowed this society to exist at present only in name, the valuable collection of books, and the excellent museum, now covered with dust and abandoned to moths. It is a shame for your beautiful city to have allowed this, for no community can afford to disregard the claims of Science."

The Eighth Annual Meeting was then declared opened, and at the request of President Smith prayer was then offered by Rev. Dr. Jabez Hall.

The President called attention to the fact that the by-laws prohibited action by the Executive Committee on a nomination to membership until the entrance fee (\$3.00) and the first year's annual dues are paid. He urged the importance of prompt payment of annual dues on the part of members.

On the recommendation of the Executive Committee the following were elected members of the Society: Moses C. White, New Haven, Conn.; Jas. D. Whitley, Petersburg, Ill.; Rev. Haslett McKim, New

Haven, Conn.; Robert Brown, Jr., New Haven, Conn.; Anthony Woodward, New York City; Albert H. Dennett, Lowell, Mass.; E. F. Hodges, Indianapolis, Ind.; Leonidas A. Willson, Cleveland, O.; L. M. Kenyon, Buffalo, N. Y.; W. A. Walker, Utica, N. Y.; A. M. Baker, Buffalo, N. Y.; Wm. S. Tremain, Buffalo, N. Y.; Abram Miller, North Manchester, Ind.; John T. A. Keegan, Indianapolis, Ind.; Harvey H. Chase, Geneva, N. Y., and Charles F. Cox, New York City.

On the recommendation of the Executive Committee, and on motion of Mr. E. H. Griffith, it was decided that papers presented at this meeting, the reading of which will occupy more than twenty minutes, shall be read by abstract, which shall not occupy more than that time.

The following programme of papers for the afternoon was announced and approved: 1. *A New Floscule*; D. S. Kellicott. 2. *Shrinkage of Cement Cells the Cause of Leakage in Glycerine Mounts*; Frank L. James. 3. *The Actinic and Visual Focus in Photomicrography with High Powers*; Jacob D. Cox.

Adjourned, to meet at 3 o'clock P. M.

TUESDAY P. M. Session.

The Society was called to order at 3.25, by President H. L. Smith.

The Executive Committee recommended the election to membership of the following: W. B. Aikins, Toronto, Ont.; Charles Mitchell, Nashville, Tenn.; W. P. Manton, Detroit, Mich.; H. E. Summers, Ithaca, N. Y.; Chas. H. Wrightman, Chicago, Ill.; Joseph Gardner, Bedford, Ind.; and Miss A. R. Taylor, Washington, D. C.

On motion they were elected members of the Society.

By resolution Dr. S. M. Mosgrove was appointed Assistant Secretary for the Cleveland meeting.

Dr. C. H. Stowell moved that immediately after the adjournment of this session a special meeting shall be called to take action regarding the death of Dr. T. S. Up de Graff. The Chair stated that, if no objection was made, he would call such a meeting at the time and for the purpose mentioned.

The Society then took up the reading and discussion of papers.

1. *A New Floscule*.—D. S. Kellicott.

DISCUSSION: Judge Cox asked for further explanation of the reasons for referring this species to *Floscularia* rather than *Stephanoceros*.

The reply was: The cilia are not in "whorls," like those of *S. Eichhornii*, but are long and rigid, like those of *Floscularia*, and tufted somewhat at the extremities of the lobes; in fact, it appears to differ from *F. Coronetta* in having the arms longer and without knobs at the extremities; the gelatinous case, also, is like those of the common floscules, rather than like that of *Eichhornii*. On these accounts, the species had been referred to *Floscularia*; however, should the young prove to have a single eye, I should prefer to place it with *S. Eichhornii*.

Dr. Fell spoke of the importance of investigating the minute forms of "pond-life," and of the work of this kind done by the local microscopical society in Buffalo.

Mr. Mills asked if the lobes were not more flexible than those of *Eichhornii*. It was stated that the lobes are quite flexible and capable of independent motion; they appear to be more flexible than those of the species mentioned, as they are also much more slender.

2. *Shrinkage of Cement Cells the cause of Leakage in Glycerine Mounts*.—Frank L. James.

DISCUSSION: Dr. C. H. Stowell said that the paper covered the subjects of glycerine mounts and white-zinc cement. He favored

glycerine as a medium for histological mounts. Formerly he had had much trouble; now that he had secured proper cement and had learned to properly make the cells with it he had no difficulty. In proof, as he thought, of Dr. James' theory, he gave an instance of a person who introduced an air-bubble in a glycerine cell, because, he said, it was better preserved from leakage. His present method was to build up the cell in parts, giving ample time for drying. When complete it is put on the turn-table, a thin ring run on, filled with glycerine, the object introduced and the cover brought into place, and a thin ring run on; after drying again a thicker ring and final finish is added.

To mount in balsam in white-zinc cell, the ring is covered with colorless marine glue, and then mounted as usual.

W. H. Walmsley advocated glycerine mounts, and gave his methods of making white-zinc cells, which were mainly as previously described. The chief feature was to thoroughly dry the ring.

Dr. Thomas Taylor said he had purchased about forty of Mr. Walmsley's slides ten years ago; they are still good.

Gen. J. D. Cox made some remarks relating his experience in mounting parts of inserts in glycerine and glycerine jelly in cells without pressure; after the lapse of some ten years, a part of them are still good; from time to time some had failed; finally, he had discovered his error, *i. e.*, in using too large covers, so that there was not sufficient depth of cement at the edge of the same.

DISCUSSION : Prof. H. L. Smith remarked that the difficulty experienced by Gen. Cox was the same which, in a still more striking manner, was to be observed with the telescope when employed in celestial photography. The lenses when properly corrected for producing sharp photographic images were entirely useless for eye-observations, and the same was true of lenses used in ordinary photographs. In making photographic pictures by ordinary microscope objectives there were two modes of using them, one by projection of images without an intervening eye-piece; the other with the use of

the eye-piece, or an amplifier, and in the latter case the image sharply focused on the glass would give a sharp photographic picture, at least that seemed to be the general experience.

Dr. Taylor asked if a vernier would not be of service in obtaining exact focus. Judge Cox replied that it would in delicate adjustments. He uses a Darlot focusing-glass and adjusts so as to read print on under surface of a clear piece of glass; he used an old negative-plate cleaned off.

Dr. H. J. Detmers presented a photo-microscope of *Amphileura pellucida*, taken by lamp-light. He said it was made by a very simple arrangement, but they are such as to make the light absolutely central, provided the Abbé condenser is first centered, which is always done. As to focusing, he used a No. 1 eye-piece, fitted in a piece of wood, which takes the place of the plate holder; he also smears the ground glass with a little cedar oil, and then focuses on the ground glass with a one-inch objective.

Prof. T. J. Burrill remarked that he thought that the photographs of *A. pellucida* presented by Dr. Detmers were the first to have been made successfully by lamp-light.

W. H. Walmsley said he wished to raise the question, What is the proper use of the words "micro-photography" and "photo-micrography"? Discussion followed, the point of which was that usage should conform to the definitions of these words in the latest editions of our standard dictionaries.

The discussion of papers finished, the president announced that the Society would now consider what action to take regarding the death of one of our foremost members, Dr. Thad S. Up de Graff, of Elmira, N. Y. He recalled his very efficient service rendered the Society at former meetings, especially at Elmira.

Dr. C. H. Stowell said he had differed with the deceased on many points of science, but he had always found him generous and hearty.

Dr. George E. Fell spoke as follows:

" Dr. Up de Graff had much to do with the present existence of the Society; he came into it at a most critical period in its existence. Some of the circumstances connected with the Columbus meeting would be of interest to the members, as at this time the Society reached its lowest ebb; its enemies were maliciously predicting a speedy death; it was confidently stated by some that the Columbus meeting would be its last. This opposition, I am confident, has had much to do with the success of the Society, as it spurred the active supporters to renewed and determined efforts for its welfare.

" I shall never forget my experience on my trip from Buffalo to attend the meeting at Columbus, and some circumstances connected with the opening of that meeting. Dr. George E. Blackham was one of the Vice-Presidents of the Society, and resided in Dunkirk. I stopped at Dunkirk and ascertained that from a press of business he would be unable to attend the Columbus meeting. Special efforts were made with the view of bridging over the difficulties, but without success. Continuing on my way and arriving at Cleveland, I met Mr. Vorce, who was in the same predicament, *i. e.*, unable to attend from press of business. With him I called on our late esteemed friend and counselor Dr. Wm. B. Rezner, also a Vice-President of the Society. The atmosphere was ominous, I assure you, when he informed us that it was impossible for him to be at Columbus; certain cases in hand were of such a nature that he could not get away. Furthermore, the information that the President, Mr. J. D. Hyatt, from a recent death in his family, could in no event be on hand, made the prospects indeed look depressing. Dr. Rezner, however, could not go, and I traveled on alone, arriving at Columbus the afternoon of the day preceding the meeting.

" From one of the hotel proprietors of Columbus I ascertained where the reverend gentleman in charge as the chairman of the 'Local Committee,' resided. I repaired to his residence and learned from his wife that he was on a convalescent tour 'down in the State of Maine.' I asked about the meeting of the Society. She had heard something about it; nothing definite had been done with reference to it; there were some letters pertaining to it in the house which I could have if I desired. I was indeed making progress, and ascertained where Prof. A. H. Tuttle, the secretary of the society, resided. I found his house closed, and was informed by his neighbors that he was 'away on his vacation.'

" With somewhat depressed spirits, I returned to the hotel, inquired again about Prof. Tuttle, and was referred to a certain book-store near by, where I fortunately found him. Although just recovering from a severe illness, he immediately set about making arrangements for the meeting. This was done 'with a vim,' all taking hold.

" Now and then a member of the Society would make his appearance; when Hamilton L. Smith, Mr. E. H. Griffith, Dr. A. B. Hervey, Mr. Walmsley, and at last Dr. Geo. E. Blackham presented themselves we knew a meeting was assured, that the last meeting of the American Society of Microscopists was not yet held, and that if a Royal Society of Microscopists existed in England, there was as good

reason for the existence and active being of an American Society of Microscopists.

"While we had a good, profitable meeting at Columbus, it was not until Doctors Up de Graff and Gleason, of Elmira, were announced, that the enthusiasm reached its highest pitch, and when the invitation from Dr. Up de Graff to visit Elmira, coupled with the request 'to bring your wives and daughters and leave your pocketbooks behind,' was reached, the future meetings and success of the Society seemed assured. The election of Dr. Blackham as President, Prof. Kellicott as Secretary, with a good board of assistants, has carried us from the dark days of uncertainty to the more satisfactory atmosphere of assured success, which the future, I trust, will only intensify.

"Will any one who attended the Elmira meeting ever forget how thoroughly the promises of Dr. Up de Graff were fulfilled? It is true we needed no pocketbooks after stepping from the cars at that hospitable town. The name of Up de Graff will be inseparably connected with our grand reception, and the great success of the meeting at Elmira, which was the beginning of the real prosperity of the Society."

The Society then adjourned, to meet at 8 o'clock to listen to the annual address of the President.

TUESDAY EVENING.

The Society, with a few visitors, assembled at 8 o'clock in the Probate Court-room for the President's annual address. Gen. J. D. Cox, ex-President of the Society, in introducing the speaker referred pleasantly to the fact that in times past Professor Smith was an Ohioan engaged in teaching in Kenyon College. He was happy to introduce one who, for a generation, has been a recognized leader, in both Europe and America, in an important department of science. The address was a discussion of the "Unconscious Influence of Natural Science Studies."

At the close, with Vice-President Stowell in the chair, a hearty vote of thanks, on motion of Gen. Cox, was given Prof. Smith for his able and timely address.

Adjourned, to meet at 9.30 A. M. in the Probate Court-room.

WEDNESDAY, August 19, A. M. Session.

The Society was called to order in the Probate Court-room, at 10 A. M., President H. L. Smith in the chair.

The minutes of Tuesday's sessions were read and approved.

The following, on the proper recommendation by the Executive Committee, were elected members of the Society: Edward F. Beckwith, Urbana, O.; Herbert R. Spencer, Geneva, N. Y.; Charles Blasdale, Jericho, N. Y.; Jas. H. Logan, Pittsburgh, Pa.; Chas. C. Mellon, Pittsburgh, Pa., and E. Hoxie Sargent, Ithaca, N. Y.

The presentation of papers then followed.

1. *Some Remarks on Fatty Infiltration of the Liver.*—L. M. Eastman.

DISCUSSION: Dr. C. H. Stowell asked: 1. Is there any difference between normal and abnormal fatty infiltration of the liver? and cited cases in which liver containing fat appeared to be normal. 2. Has Dr. Eastman succeeded in staining such tissues with hæmatoxyline? 3. What is the microscopical appearance of the liver tissue in yellow atrophy?

Dr. Eastman replied, that such infiltration becomes abnormal when so much fat infiltrates that the function of the organ is interfered with. He had not used hæmatoxyline in this case, but in its use in other cases, he had used a solution of alum for removing excess of color, instead of acetic acid. Concerning yellow atrophy, he said, experience shows that it assumes a granular condition, and owing to albumen not being restored, the liver contracts.

Dr. Fell asked how to distinguish between fatty degeneration and yellow atrophy. Eastman considers that the former causes the latter.

Dr. Stowell asked if we can not have fatty infiltration alone, *i. e.*, not associated with other diseases, *e. g.*, tuberculosis. Dr. Eastman

said the liver may be largely stored with fat without disease, as sedentary habits or special food may cause large increase of fat in the liver for a while, but a change in the mode of life or food may scatter the fat.

Dr. S. O. Gleason suggested that the disease was caused by paralysis of terminal nerve fibers of the cells, due to mechanical pressure.

2. *On the Determination of the Absolute Length at 62° F. of Eight Rowland Gratings for the Determination of Wave Length.*—Wm. A. Rogers.

On account of the unavoidable absence of the author the paper was read by title.

3. *The Uredineæ of Illinois.*—T. J. Burrill.

DISCUSSION: H. F. Atwood asked about a fungus which he had found on pine needles. Dr. Taylor explained the structure of the cup fungus, which he supposed was the one inquired about. Mr. Atwood said he had not seen it in the stage of an ordinary cup fungus; on opening the needles an orange colored powder appeared.

A. B. Leckenby asked about the favorable conditions for the propagation of these fungi. Prof. Burrill suggested that electrical conditions may influence their growth. He was satisfied that they were true parasites; he thought that rapidly-growing grain, for example, may be attacked more readily than other, because its tissues are less able to resist their attacks.

4. *Butter and Fats—How to distinguish one Fat from another by means of the Microscope.*—Thomas Taylor.

DISCUSSION: Dr. Fell referred to Dr. W. T. Belfield's paper on Lard Adulteration read at the Chicago meeting of the Society, and to the practical value of such tests. He moved that a committee of

three be appointed, as requested by Dr. Taylor, to examine and report to the Society concerning the methods and claims of Dr. Taylor. The motion was carried. The Chair reserved the appointment of the committee.

Dr. Detmers spoke of Dr. Belfield's work in detecting adulteration of lard; he said in a large packing-house in Chicago, which killed daily 8,000 hogs, he could not get one half-ounce of pure lard; he also spoke of families being poisoned by made butter.

Dr. Taylor spoke of market men disguising butterine and selling it for pure butter. He, at request, had examined a number of cases successfully, and restraining measures had been enacted in Washington, so that now specimens had to be correctly labeled.

5. *Pollen-tubes again.*—John Kruttschnitt.

The Chair announced the committee on examination of Dr. Taylor's paper as follows: Dr. H. J. Detmers, Dr. Geo. E. Fell and Mr. C. M. Vorce. [Subsequently, Dr. Lester Curtis and Mr. H. F. Atwood were added to the committee.]

Adjourned to meet at 3 P. M.

WEDNESDAY P. M. Session.

The Society was called to order by President H. L. Smith at 3 P. M.

On motion of the Executive Committee, these were elected members of the Society: A. W. Brayton, Indianapolis, Ind.; Albert A. Wright, Oberlin, O.; M. L. Seymour, Normal, Ill.; Marshall D. Ewell, South Evanston, Ill., and John L. Skelton, Chicago, Ill.

The first paper was entitled—

Poisonous Dried Beef.—H. J. Detmers.

DISCUSSION: Dr. Stowell said he thought that Dr. Detmers was perhaps on the eve of an important discovery; that cases are on record in which the mother, having become frenzied, her nursing child sickened and died in consequence; he thought Dr. Detmers was not warranted in concluding that because he found micrococci in this instance the beef creature was frenzied.

Dr. Detmers replied that he did not say positively that an animal subjected to the tortures of travel in a crowded car and chased over the city streets, or that had been trampled on by other cattle in a car, were subject to frenzy.

Dr. S. O. Gleason said Dr. Detmers had made two points of especial interest, viz., ptomaine and micrococci; ptomaine is developed by a fermenting process; micrococci develop an alkaloid ptomaine, and he therefore thought Dr. Detmers right and that the ptomaine was the cause of the death.

Dr. Fell asked, What is the effect of trichinæ in ordinary cases? he said many must be eaten, as Dr. Detmers had found 5 per cent. of the hogs affected by the worm; that many physicians did not look for serious results when but a small portion of affected meat was eaten.

Dr. Detmers said that he found numerous trichinæ in fat hogs and not in emaciated ones.

Dr. Salmon Hudson said trichinæ do not harm one if well cooked; that he really thought that a majority of people were affected more or less with the parasite.

Dr. Detmers added that trichinæ are very easily destroyed; if the western farmers were all compelled to kill and burn their affected hogs, the pest could be eradicated in a few years,—the hog being a short-lived animal.

2. *Immersion Objectives.*—Ernst Gundlach.

In the absence of the author, the paper was read by Mr. H. H. Turner.

DISCUSSION: Prof. Burrill recalled an experience of his,—an objective, a $\frac{1}{10}$ inch, made before homogeneous objectives were in use, did not come up to expectation in performance; he happened to try it on an object under a *thick* cover, when its performance was excellent.

Judge Cox explained this by referring to an experiment by Dr. J. J. Woodward, in which he built up the cover with additional thin covers until it was thick enough to completely fill the space between the front of the objective and the object, thus making it homogeneous. He said, it appears that Mr. Gundlach proposes to do away with homogeneous immersion fluids at the expense of working distance, when this is a quality we most assuredly want. It was the objection formerly made against wide-angled objectives that they had not sufficient working distance to render them practical; the great charm of the homogeneous immersion objective is its ample working distance and at the same time superior performance.

Prof. Burrill asked, What is the difference of refraction when a thin or a thick layer of water is used as an immersion medium?

The president in reply said that in using water the rays are refracted in the water; on emerging they take a course parallel to that pursued in the cover, so if we can use a homogeneous medium we can use any thickness of cover less than the working distance of the lens.

Prof. A. H. Tuttle had some doubts about the practicability of the proposed plans. He hoped that we may yet have dry lenses sufficiently good. The biologist must have lenses with working distance; the great value of homogeneous immersion objectives is that they enable one to work *within* the object.

The Chair said that the committee appointed this morning to report upon Dr. Taylor's paper had asked to have two others added to the committee; no objection being made, he would appoint two additional members. He named H. F. Atwood and Lester Curtis.

H. F. Atwood said it had been requested that the Society assemble in the park at some convenient time during the meeting in order that a photograph may be taken by Mr. Ryder; he moved that the Society shall comply with this request immediately on adjournment of the Thursday A. M. session. Carried.

Dr. Fell moved that Dr. Wm. J. Lewis, Judge J. D. Cox, and Mr. H. F. Atwood be made a special committee on finance; the object being to institute some plan by which a permanent fund shall be accumulated. The resolution was adopted.

3. *Observations on Infusoria, with Descriptions of New Species.*—D. S. Kellicott.

The paper was read by title.

Dr. C. H. Stowell then took the chair and the President read the following two papers:

4. *On a Simple Instrument for Testing Homogeneous Immersion Fluids.*—H. L. Smith.

5. *On some Formulæ for High Refracting Media for Mounting Microscopical Objects.*—H. L. Smith.

Dr. Detmers remarked that Prof. Smith had mounted in this medium for him a micrometer; the lines show in a superior manner.

6. *The Cultivation of Bacteria with Special Reference to Cholera.*—Lester Curtis.

Dr. Detmers moved a vote of thanks to Dr. Curtis for his able presentation of this important matter. Carried unanimously.

Adjourned.

THURSDAY, August 20, A. M. Session.

The Society proceeded with business at 9.30 A. M., President Hamilton L. Smith in the chair.

The following were elected members of the Society : Sereno N. Ayres, Jamestown, N. Y., and Walter M. Miller, Portsmouth, O.

Dr. H. J. Detmers moved that a committee be appointed by the Chair to report on the advisability of the publication of a quarterly microscopical journal by this Society. After brief discussion, the motion was put, and the chair thought the motion lost, and so declared it. Mr. H. F. Atwood said he thought the question was not fully understood, and asked to have the motion again voted on. The Chair said : "If no objection is made, I will ask the Society again to vote by the uplifted hand." The vote was so taken and pronounced lost.

The following brief descriptions of new and improved apparatus were then presented :

1. *The Griffith Turn-table, No. 5.*
2. *The Griffith Turn-table, No. 6.*
3. *The Griffith Mechanical Finger.*
4. *The Griffith Stage Diaphragm.*—E. H. Griffith.

The President said he considered Mr. Griffith's turn-tables valuable improvements.

Mr. R. N. Reynolds asked about the manner of centering certain slides. Mr. Griffith explained.

The Chair said the time had arrived for election of a Nominating Committee, said committee to consist of seven members; as usual, they would be elected by ballot, after free nominations, the seven having the greatest number of votes being elected. Nine persons were nominated.

C. H. Stowell and H. F. Atwood were appointed tellers, after which the ballot was taken.

While the votes were being counted by the tellers, the hearing of papers was again resumed.

5. *Method of Mailing Histological Sections.*

6. *Method of Preparing a Fresh Balsam Mount for Transportation.*

7. *Method of Marking the Position of an Object on a Slide.*—R. N. Reynolds.

Dr. Taylor remarked that he had found trouble in making the adhesive strip of paper stick to the slide in such cases as that mentioned in transportation and the like: he now added a little glycerine to the gum and found it work far better.

8. *Notes on the Epithelium of the Mouth of Necturus.*

9. *Notes on the Blood Corpuscles of Necturus.*—Simon H. Gage.

DISCUSSION: Dr. Stowell dissented from Prof. Gage's conclusions; he did not think it followed that if one cell had or appeared to have a network, that all cells must have such; it was necessary to know what reagents were used and what objective; he held that reagents produce appearances which are often mistaken for structure; he disbelieves in the cellular network theory, also in the third corpuscle.

Prof. Gage said he had enjoyed the speech in reference to intercellular network, etc. He referred to the difficulties in the way of the observations made, such as the disproportionate number of red to white corpuscles, etc.; had not seen the latter after the blood was drawn; probably overlooked on this account; he defended the third corpuscle element, holding that it was proven; was not satisfied about the motion of the white corpuscle of *Necturus*. He said he was not crazy on the subject of objectives; he considered a

morphological insight better than any fifty horse-power objective. In reply to queries by Dr. Dayton, Dr. Curtis and Dr. Fell, he said he had not found two kinds of white corpuscles, but had seen granules in white corpuscles; had not mounted them; had studied the living elements; had seen what might fairly be interpreted to be an intercellular network. He said the ablest histologists in Europe at present believe in the theory of the network, and in such matters they are very cautious and painstaking; they are content to work and get their reputation after they are dead, while we work ten days and want our ability recognized right off.

The report of the Tellers on vote for Nominating Committee was then read; the committee elected: Dr. Robert Dayton, Chairman, Edward Bausch, Dr. H. J. Detmers, Dr. Frank L. James, Dr. Wm. J. Lewis, Dr. S. M. Mosgrove, Dr. J. O. Stillson.

10. *First Development of Muscle in Embryos of Chicken and of Man.*

11. *Studies of the Development of Cartilage in the Embryos of Chicken and of Man.*—M. L. Holbrook.

These papers were read by title.

13. *Two Cases of Tumor of Mammary Gland in Lower Animals.*—A. H. Tuttle.

DISCUSSION: Prof. Gage said it was held not many years since that animals did not suffer from disease unless contaminated by man; he mentioned two cases of fish caught with hook which had tumors; had found cyst of the oviduct in *Necturus*.

Dr. James said that when he went to Mississippi County, Ark., in 1870, they were very much troubled with wolves, which made such frequent inroads upon their flocks that sheep-raising became almost impossible. After a few months these attacks ceased, and the reason of the cessation was made apparent by finding the wolves lying dead all through the woods—killed by the “black tongue.” The domestic cattle had had the disease, and from them it spread to the deer.

The wolves ate the dead bodies and themselves died. So great was the mortality among the wild animals that several years elapsed before deer or wolves became at all plentiful in a region that had formerly swarmed with them.

Dr. Detmers asked if it was not just as likely that the cattle caught the infection from the deer as *vice versa*?

Dr. James replied, "Yes, for the deer might have been dying off for some months before it was noticed by the residents, as the country with the exception of a belt a mile or two wide along the river (Mississippi) was an unbroken wilderness for hundreds of miles north and south, and for fifty or sixty miles west to the St. Francis river."

Dr. Gleason had found tumors of considerable size on woodchucks.

These were elected members of the Society: Miss Mary M. De Veny, New York City; M. A. Veeder, Lyons, N. Y.

Adjourned, to meet at 2 P. M. in Le Grand Rink, for Working Session, and for Annual Soirée in the evening at the same place.

THURSDAY AFTERNOON AND EVENING.

In the afternoon the Society, with many visitors, assembled in Le Grand Rink to witness expert methods of work, explanation of special apparatus, etc.; for a full account of this Working Session see page 203 of the first part of this volume.

The Annual Soirée occurred in the evening at the same place as the Working Session; the rink proved to be an admirable building for the purpose; although hundreds of people visited the room there was no crowding or inconvenience. The Soirée at Cleveland adds one more successful exhibition to the brilliant series of popular entertainments at our annual meetings.

FRIDAY, August 21, A. M. Session.

The Society called to order at the usual time, Vice-President C. H. Stowell in the chair.

The following were elected members of the Society: F. P. Anderson, Belle Isle, Mich.; G. C. Stockley, Cleveland, O.; Geo. W. Leighton, Wheeling, W. Va., and W. H. Johnston, Notre Dame, Ind.

Moved by the Secretary that the Chair appoint a committee of two to revise the Constitution and By-Laws of the Society. The motion was carried and Judge J. D. Cox and Dr. Wm. J. Lewis were appointed such committee.

Dr. F. S. Newcomer moved a vote of thanks by the Society to the reporters and newspapers of the city for their kindness in printing notices and abstracts of the proceedings of this meeting. Carried unanimously.

Dr. L. M. Eastman moved that the thanks of this Association be tendered to Mr. C. M. Vorce and his assistants for their unceasing and well-directed labor in preparing for the conveniences of this meeting. Carried unanimously.

Gen. Cox said: "Mr. Chairman, the custom of giving our thanks to our retiring officers is a good one, but there is some danger that it may become too merely formal. Our President, whose necessary absence this morning we regret, has not only discharged his official duties with ability, courtesy and dignity, but I know I speak the feeling of the whole Society when I say that it has been a constant delight to us to have him in our midst, and that we have constantly followed him with our warm affection, as well as our heartfelt respect. We all earnestly hope he may many years be spared to lead us in everything which pertains to microscopy, and to raise the character of our deliberations by the wisdom and sweetness of his influence. In this spirit I move that the most hearty thanks of this Society are tendered to Prof. Hamilton L. Smith for the manner in which he has discharged the duties of the Presidency during the year past.

Dr. Fell seconded the resolution, which was carried by a unanimous standing vote.

The nominating committee, by its chairman, Dr. Robert Dayton, reported the following: For President, Prof. T. J. Burrill, Champaign, Ill.; Vice-Presidents, Dr. F. S. Newcomer, Indianapolis, Ind., and Dr. Wm. J. Lewis, Hartford, Conn.; Members of the Executive Committee, Dr. F. L. James, St. Louis, Mo., Jno. Kruttschnitt, New Orleans, La., and E. H. Griffith, Fairport, N. Y. On motion the Secretary was directed to cast the ballot of the Society for the nominees; they were declared elected. [D. S. Kellicott, Secretary, Buffalo, N. Y., and Dr. Geo. E. Fell, Treasurer, Buffalo, N. Y., hold over by virtue of election at Rochester until the annual meeting of 1887.]

Dr. Lucien Howe moved the appointment of a committee to devise and report a plan by which any member may have sections of any subject made for him. The motion prevailed, and Dr. Howe and Dr. Geo. Duffield were made such committee.

It was moved by Dr. James that a committee be appointed to devise some means of arranging and preserving the photographs of members of the Society which the forethought of Mr. Griffith had secured, and that the thanks of the Society be tendered to Mr. Griffith. It was adopted.

Dr. James and Dr. Dayton were appointed and requested to report before final adjournment.

The matter of Working Session for the next annual meeting was by resolution referred to the Executive Committee.

Then followed the presentation of papers.

1. *An Imperfection of the Eye and Test Objects for the Microscope*.—Lucien Howe.

Dr. F. S. Newcomer said he considered the paper a valuable one; it was true that no two eyes were alike, hence the importance of an

examination into the nature and peculiarities of the eyes before examining test objects. Persons habitually using spectacles should not remove them when using the microscope.

2. *Methods of Preparing Chick Embryos for Microscopic Examination.*—W. P. Manton.

Prof. Gage thought any one may succeed by following the directions indicated in the paper.

Dr. S. Hudson preferred an incubator to a hen for the development of the eggs.

3. *Rapid Section-Cutting.*—James E. Whitney. Read by title.

4. *Some Diatom Hoops, and the Question of their Mode of Growth.*—Jacob D. Cox.

[Mr. C. M. Vorce's remarks after the reading of this paper are printed in full at page 139.]

Gen. Cox said Mr. Vorce's observations corroborated his remarks on *Isthmia* printed in the *American Microscopical Journal* some years ago.

5. *Urinary Deposits and their Clinical Relations.*—Salmon Hudson.

6. *Tables of Numerical Apertures.*—H. J. Detmers. Read by title.

Dr. Fell called attention to the fact that the picture of Mr. Tolles, in the Proceedings of the Rochester Meeting, was quite satisfactory to Mr. Tolles' family, although evidently not satisfactory to the editor of *Science*.

A communication was then read and referred to the Executive Committee, inviting the Society to meet next year at Chautauqua, N. Y. It was as follows :

In behalf of the Chautauqua Assembly I invite the American Society of Microscopists to make Chautauqua, N. Y., their place of meeting next year.

The Assembly will make hotel rates \$2.00 per day, and cottage board \$1.00 per day.

It may be urged that there are always excursion rates to Chautauqua. There are ample rooms for all the meetings; freedom from noise and dust; and sympathetic and appreciative audiences.

If the last week in July should be determined upon as the time for the meeting, during the teachers' annual gathering, it is likely many will become members.

Good facilities exist for the use of projection microscopes.

W. C. J. HALL,

Trustee of Chautauqua Association.

CLEVELAND, O., August 20, 1885.

Adjourned to meet at 2 P. M.

FRIDAY P. M. Session.

Society called to order by Dr. Stowell at 2 P. M.

Judge Cox, for the Committee on Revision of Rules, reported progress. The committee would endeavor to complete its revision in time for insertion in the printed Minutes.

The Secretary read the report of the committee appointed at Rochester to consider the feasibility of collecting typical slides illustrating special methods and objects. The following is the amended report, which was adopted :

The committee appointed at the Rochester meeting, with instructions to report upon a plan for collecting, storing and circulating typical slides of microscopical preparations, report the following : It is considered by the committee both desirable and feasible for the Society to acquire, hold and circulate, for the advantage of the members, typical slides of mounted objects and illustrations of special methods, especially slides illustrating the memoirs and communications to the Society's Proceedings. Authors of papers and inventors of methods of preparation will undoubtedly take pleasure in depositing with the Society slides illustrating their conclusions, and it is believed that such slides will greatly assist students, and that members will gladly take advantage of the opportunities of such collection. It will certainly put within reach of those who doubt others' conclusions the means for examination better than mere drawings and descriptions.

Rules for storing and circulating the objects are suggested as follows: The full size Pillsbury Microscope Slide Cabinet appears to be convenient for this purpose. One cabinet would be sufficient for the present, and additional cabinets may be purchased as they may be needed. For circulating the slides by mail, Bradley's Mailing Cases are handy for transporting a few slides at once; two dozen should be secured. For sending larger numbers to one address, the boxes used by the American Postal Microscopical Club are more convenient and safer; a half dozen of these, it seems, will be sufficient.

Each package mailed should have a printed label pasted on the wrapper, in order to secure the return of packages not properly delivered; it may read as follows: "Should this package, for any reason, fail to reach the person to whom it is addressed, the *Postmaster* will confer a favor by notifying——, who will forward postage for its return to him." Tags should also be used on the mailing boxes, and the name and address of the custodian of the collection printed on them.

It is recommended that a list of the objects at present owned by the Society shall be printed in the Proceedings of this meeting, and that annually hereafter lists of the slides added during the year shall be likewise printed, together with remarks by the Curator on the condition of the collection, and with lists of slides lost, ruined or withdrawn from circulation.

The list, or catalogue, shall be printed with the names alphabetically arranged and the slides numbered consecutively. A slide may be catalogued under more than one name, if necessary, but shall have but one number.

The boxes for storing the slides should be marked according to the designation in the printed catalogue (as above), and the name of the slide be written opposite its number on the box label.

Each slide should bear the Society's label, color French gray, as follows :

AM. SOC. MIC.
Box.....
No.....

The letters designating the box and the number should be stamped on with types, which may be obtained from any printer; this in order not to violate postal rules.

The slides may be sent to any member on application, or to any person, not a member, engaged in investigation, upon the personal endorsement of a member, who shall, under such circumstances, become personally responsible for the return of the slide or its value. Slides should be sent in the order of application, and should be returned as soon as two weeks after being received.

A record, kept in a suitable book, of applications, the date of mailing and return of slides, with record of postage paid and returned by members, should be annually presented to the Auditors of the Society for inspection and approval.

It is suggested that authors be asked to deposit in this collection slides illustrating their descriptions; also that this request extend backward in time to those whose papers have already appeared in the Proceedings.

D. S. KELLICOTT,
LOUISA REED STOWELL,
FRANCIS M. HAMLIN,

Committee.

Dr. Fell reported for the Committee on the Standard Micrometer, and moved that Dr. R. H. Ward, of Troy, be added to the committee. The report was accepted, and Dr. Ward added to the committee.

Dr. Fell reported as Treasurer and Custodian. Gen. Cox moved the adoption of the report. Carried.

Dr. Fell moved that the Treasurer and Custodian of the Society shall be required to furnish a bond for \$1,000, which shall be approved by the Executive Committee; said bond to be in the custody of the Secretary. The resolution was adopted.

Dr. James moved that illustrations of papers presented should be furnished by the authors, when exceeding a limit to be fixed by the Executive Committee.

Gen. Cox and Dr. Detmers advocated leaving the matter in the hands of the Publication Committee as at present.

Gen. Cox moved a substitute that the Committee on Publication be authorized to limit the amount expended for illustrations at their discretion as to the needs and importance of the papers. The substitute was accepted and adopted.

Papers were then presented:

1. *Improved Method of Constructing Slide-Cabinets*.—Henry E. Summers.

2. *A Combined Focusing and Safety Stage for Micrometry with High Powers*.—C. M. Vorce.

3. *A New Helio-stat*.—S. W. Stratton and T. J. Burrill.

The paper was read by the latter.

4. *An Improved Life-Slide*.—Jas. H. Logan.

Read by the Secretary.

5. *Remarks on a New Device for Enabling Two Observers to View an Object Simultaneously.*—Jas. H. Logan.

Read by title.

6. *Some New Features in Connection with Electric Illumination as applied to the Microscope.*—Wm. J. Lewis.

Read by title.

The Committee appointed to report a plan for the custody of the photographs of members rendered the following report :

We would recommend that the Treasurer be authorized to receive the photographs from Mr. Griffith and take charge of them and those which shall be received in the future. We will also recommend that he be authorized to procure a suitable album, substantially bound and large enough to contain the pictures of all present and prospective members, to the number, at least, of five hundred pictures. This album shall be in charge of the Custodian.

FRANK L. JAMES,
ROBERT DAYTON.

Dr. Fell reported the condition of the Spencer-Tolles memorial fund. The report is as follows :

SPENCER AND TOLLES FUND.

To the Officers and Members of the American Society of Microscopists :

In accordance with the resolution *unanimously* adopted at the Rochester meeting of the Society, establishing a Spencer and Tolles Memorial Fund, the following report is presented : The first cash subscription to this fund was made by the Royal Microscopical Society, December 17, 1884. Since that time the subscriptions have come in so slowly that this report will present but a meager list of subscribers, and in view of the unanimous adoption of the resolution establishing the fund, not nearly so large a list as should have been expected. Prof. Wm. A. Rogers, with his characteristic action in furthering any of the projects of the Society, has offered to subscribe \$25.00 and guarantee \$15.00 additional, contingent, however, upon a concerted action of the Society towards the increase of the

fund. He suggests that the income of the fund be awarded in prizes for specific original research. The subscriptions to the fund are given below.

Royal Microscopical Society.....	\$25.20
J. D. Cox.....	5.00
D. S. Kellicott	5.00
George E. Fell	5.00
John Kruttschnitt.....	5.00
F. S. Newcomer	5.00
Chas. Shepard.....	5.00
E. H. Griffith	5.00

Total..... \$60.20

Respectfully submitted,

GEORGE E. FELL,

Treasurer and Custodian.

Gen. Cox moved that the Secretary acknowledge the receipt of the contribution to the fund by the Royal Microscopical Society, and express the appreciation of this Society for the courtesy. Carried.

The Chair said that the time had come to terminate the business of this annual meeting, a meeting which he trusted all would remember with pleasure and profit. He thanked the members for courtesy shown him as presiding officer for the day in the absence of President Smith, and requested Gen. Cox and Dr. Dayton to conduct President-elect Burrill to the chair, which he would then resign.

Prof. Burrill said, on taking the chair :

Members of the Society—I have sometimes looked up from below at a man performing in the air on a rope or horizontal bar, climbing about in a graceful and apparently careless manner, and thought, from my safe standpoint, that it was an easy thing to do. I stand here now under somewhat similar circumstances. I have, from my seat among you, watched other presiding officers who have preceded me as President of this Society, and they performed the duties of their office so well, and with apparently so little effort, that I have thought it an easy thing to do. I now find that the elevation is greater than it looked to be from below. I will endeavor, however, to perform the duties of the office to which you have so kindly elected me, to the best of my ability, and shall endeavor to do so to your satisfaction. I thank you for the election and for your cordial reception.

Dr. Stowell then moved the Society adjourn *sine die*.

D. S. KELLICOTT,

Secretary.

S. M. MOSGROVE,

Assistant Secretary.